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upon the place, but because I do not find that it is so fine as some in *Cambden*, or *Ciampini*, that has lately writ upon this subject, I will not trouble you therewith.

When we had beheld as much of it as time would give us leave, we cover'd it all up again, and there it remains unto this very time ; and at present the Close in which it is, is sown with Line. I am

Hull, Aug.
2. 1700.

Your Humble Servant,

Abr. de la Pryme.

Reader of Trin. Church.

V. An Account of Books, viz.

I. *Petri Chirai, Consilarii, Medici & Professoris Regii Monspeliensis de Motu Cordis Adversaria Analytica. Monsp. 1698 in 12.*

THe Author of this discourse endeavours to deliver an entire system of the motion of the Heart and its Causes in an Analytick Method, advancing each Position in the Order, the mind arrives at the knowledge of it. He divides this subject into three distinct Enquiries.

1. What is the Cause of the Contraction of the Heart ?

2. What is the Cause of its Dilatation ?

3. Why the motion of the Ventricles and Auricles are not contemporary, but alternate ?

Since

Since the Heart is no more than a Muscle of a peculiar Frame, it is certain the force applied to cause it Contraction, must be of a like nature with that of the other Muscles in an Animal Body. It is agreed by all, the contraction of these is performed by the decurtation or shortning of the Flethy Fibres, which compose their Belly.

This part, which alone suffers alteration of its Figure in Muscular Action, is composed of a multitude of Prismatic Parallel Fibres, with innumerable tendinous Threads, passing from one to another, and binding 'em together. Let us then consider these Fibres as so many parallel Ropes, with one weight suspended at the bottom of them. It is plain then the distance between the upper and lower extreme can only be lessened, and the weight drawn up in one of these following ways. If some String or Body without the Ropes draw them asunder, if some Body be intruded between them, and after the manner of a wedge force them to recede ; or, lastly, if some exterior Body compress and force them to approach each other, and no other way than these can be conceived for their raising up the weight so placed.

By applying the Principles thus premised, and considering well the structure of the heart, it will without much difficulty appear whence its contraction is most likely to proceed. If we make a narrow scrutiny into the Breast, and examine the *Pericardium*, we shall not find any Threads, Strings, or other exterior power capable of deducing or drawing asunder the Fibres of the Heart. There are indeed within it divers Tendinous Threads arising from its investing Membrane, which terminate in its inmost substance intersecting the Carneous Fibres, and binding them together. But it cannot be supposed these serve to contract the Heart. There is no force beyond to draw them. Again, if
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we could conceive they were the Authors of their own motion, by receding every ways from the Center of the Heart, instead of contracting this, must necessarily enlarge its bulk. Some other force must be assigned, from which that proceeds. No more can the Fibres of the Heart effect a Contraction by their Springiness, for then the several parts of the Heart must be unequally moved. Again, if the heart were once dilated, and their elastic power over-balanced, by what means can they recover it.

The next doubt is whether there be any exterior Body, which may compress the Fibres and evacuate the Ventracles. As for the external Prements; the Liquor of the *Pericardium*, is too inconsiderable a force to project the blood to the extreme parts with such an *Impetus*, as is necessary to continue the Circulation. Nor can the *Pericardium* do this, which if the *Thorax* be opened, does suffer no visible contraction, notwithstanding the heart continues to beat: Nor the Lungs, for then the Contraction could only be in Inspiration, and the *Pericardium* must be prest on all sides close to the Heart, both which are contrary to Experience.

From the enumeration of these several ways it appears, the Decurtation of the Fibres of the Heart can only proceed from a substance in their Pore and Interstices, which, since no solid wedges are to be found there, must needs be a fluid Matter.

But whence shall this fluid be furnished? 1. Not from the Liquor of the *Pericardium*, since in dissecting dead Bodies, this is found to be wanting; and if it be let out by dividing this Bag in a Dog, and the Heart be drawn through the Orifice, it continues notwithstanding to beat. Besides, if the Fibres of the Heart were contracted by imbibing the Serosities in the same manner as Ropes are, this could not be done under a
long

long time, which does not consist with the quickness of this Contraction. It seems then highly probable that this Fluid should be supplied by the Nerves, and as the Heart agrees in its structure with the other Muscles, it should be moved in the same manner as they are by an Influx of Animal Spirits from the Brain. But if we will not acquiesce here without a further examen, we shall find this opinion repugnant to the truth, by an experiment which is not a little surprizing. For if the Recurrent Nerves, which send some Branches to the Heart, be cut in the lowest part of the Neck, and the intercostal together, with the eighth pair included in the same sheath, be likewise cut, and you thrust your Finger carefully under the *Pleura*, and draw back the *Ganglia* of the Intercostal Nerve at the Root of the first Ribs, and so divide it, the motion of the Heart is so far from being interrupted, that it will continue fifty, and in stronger Animals threescore hours. A Dog that has not been fed in eleven days, and almost dead with hunger, has continued to live, and his Heart to beat twenty hours. The Hearts of Eels, Serpents and Frogs, retain their motion for a much longer time, and when it has ceased for a time, by powring warm water on them, it is renewed. Hence it is plain the motion of the Heart must be derived from other causes, than the Influx of Spirits from the Brain, If it be alledged, there are some remains of Spirit after the communication is hindred, and the Contraction of the Heart proceed from these, why does not the like happen in any other Muscles, many of which are more compact and more fitted to retain a spirituous matter than the Heart is. Further the Author labours to prove that such remains are an incompetent force to produce such an effect.

If it be objected that no wound of a Nerve is mortal, and if the Spirit did not conduce to the motion of the Heart, the Dog would not so soon dye. *Monf. Chirac* thinks it sufficient that the Lungs are inflamed, and the Animal seized with an acute Fever, which must necessarily happen in this case, because the Nerves of the Heart and those of the Lungs are contained in the same sheath, and when they are cut asunder, the *Lobuli* of the Lungs must sink, and the circulation of the Blood thro them be intercepted.

The Author pursuing his Enquiry, in the next place excludes the Blood discharged into the Heart from the *Vena Cava*, and the Pulmonary Vein from the office of supplying these Motive Spirits; for if a Ligature be made on these Vessels, the Heart, after its Ventricles are evacuated, will nevertheless persist to contract itself: And for this and other Reasons, the Coronary Artery is incapable of any such Function. Having thus reasoned at large, and enumerated all the ways he thinks possible the Heart should be contracted, he concludes at last there must be in the Heart itself certain Colatories and Treasuries, in which this Motive Fluid is separated and lodged, as the Animal Spirits are in the Brain. That in the time of Action, it is transfused out of these Store-houses into the Cells and Interstices of the Fibres of the Heart, which it contracts in a moment: During the *Systole* he supposes the Colatories suffer an alteration of their figure, and the passages being stopt and closed by the swelling of the Fibres, there cannot be any new Influx of Spirits, and so the Heart yields to the force which dilates it, which is the subject of the next Enquiry.

The Dilatation of the Heart cannot proceed from any external pressure. The Lungs filled with Air, the *Pericardium*, the Liquor contained in this Bag, the Membrane which invests the Heart, are all insuffi-

cient to compress and bring together its sides.

If we look into the Heart itself, there is nothing more to be found besides its Arteries and Veins, with the Blood they contain, the Spirits flowing in by its Nerves, and the Tendinous Strings which connect and bind its Fibres together. Besides other reasons, the Dilatation cannot be ascribed to the first of these, because the Heart persists to dilate and contract itself for some time after it is taken out of the Body. No more can it be ascribed to the Influx of the Animal Spirits from the Brain, since according to a calculation made on the above-recited Experiment, it is dilated and contracted above two hundred and forty thousand times in a Dog, after the Nerves which supply it are cut asunder. Monsieur *Chirac* concludes this work is performed by the springiness of these Tendinous Fibres. These by the sides of the Heart receding being overstrained, by their Elastick power contract themselves, and constringe and draw together the Fleshy Fibres ; now these being thus lessened in thickness, must be lengthned, and the Heart together with them. He thinks the Influx of the Animal Spirits may help these Fibres to preserve their Natural Tension, and therefore when the Nerves are cut, losing by degrees their Elastick power, the motion of the Heart at last is suppressed.

The third and last Enquiry is, why the motion of the Auricles and Ventricles of the Heart is alternate : That is, while the Auricles are contracted, the Ventricles are dilated, and so reciprocally : The continuity of the Fibres and their Cellis in both Ventricles is a good reason why they should have a contemporary motion, and the same reason will hold for the Auricles. But since in a *Fetus* the Auricles contract themselves before the Heart has any sensible motion, they must necessarily drive a certain portion of Blood into the

the Ventricles, and force out of it an equal quantity of the crude Liquor before contained in it. During this Impulsion the Ventricle is hindred from contracting itself, and the Fibres are relaxed ; but no sooner is this impediment removed, but the Spirituous Fluid acts on the Fibres of the Heart, and causes it to contract itself. Now the Dilatation and Contraction of either of these Antagonist parts being performed in an instant of time, it must necessarily fall out, that the Auricles, after their Dilatation is over, will again contract themselves, when the Ventricles are relaxed, and when these are contracted the Auricles on the contrary will be dilated. And thus the Author thinks he has explained the Great Spring of the Animal Machine.

To justifie himself from the charge of borrowing from Monsieur *Vieussens*, he annexes the whole eleventh Chap. *de Motu Cordis & Auricularum illius*, out of his Book *de Principiis proximis & remotis mixtorum*. Nor can he forbear to charge with some eagerness that Gentleman, for robbing him of his Invention, of extorting an Acid out of the Blood by distilling its fixed Salt with Bole, which way he pretends first to have revised and taught in his publick Lectures.

2. *Ejusdem Dissertatio Academica An Incubus Terrum rubiginosum ? Monsp. 1694. in 12.*

THe *Incubus*, or Night-mare, as it is called in *English*, is not a meer Dream or Fancy, but a real indisposition. Tho some Dreams are the pure effects of hazard or chance, yet those which often receive and have a determinate object, arise from some impressions which the Spirits receive from the Body. Thus when the Vessels are full of a hot *semen*, it is natural to dream of Venery, when the Urine irritates the Bladder, of

making Water, and a certain person dreaming his Leg was turned into a Stone, waking found it paralytick and motionless. There is no room to doubt these appearances in sleep, of a Load on the Breast, of being beset by a Hag, proceed from a painful and difficult respiration, and therefore may very properly be termed a Nocturnal *Asthma*.

Monsr. *Chirac* will not admit the Nerves to be obstructed, as some have fancied by the Serosities collected in the Ventracles of the Brain. He thinks this distemper entirely proceeds from a Defect in the digestion of the Aliment in the Stomach, and a slowre Crude and viscous Chyle which thickens the Blood, and renders it unfit to pass thro the narrow Channels of the Lungs. The sense of Compression on each side of the Breast proceeds from the division of their Lobes, part of which are on one, and part on the other side the *Mediastinum*.

Melancholy and timorous persons are frequently infected with this Malady, and it may very well be reduced to the Tribe of Hypochondriac Symptoms. If this distemper be neglected, it commonly terminates in *Synopes*, *Epilepsies*, *Apoplexies*, or other troublesome or mortal Diseases. That is to be accounted worst which seizes persons waking, or when the sleep is broken abruptly there is a *Tremor* of the heart, a *Vertigo*, cold sweats, or a *Deliquium*, in such case the condition of the party must be judged worse, than if it be free from any of these symptoms.

As for the Authors Method of Cure. He thinks after the use of general Remedies to prepare the Body, a course of Aperitive and Altering Medicines are to be continued for some days, but the chief Article here is the assiduous use of Absorbents, as Crabs eyes, Coral, &c. Of this last kind he chiefly relies on Martial Remedies, especially the Rust of Iron, which does not
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only take off the edge of the Acid, but by its rough and sharp parts breaks the Viscosity of the Animal Liquors.

3. *Ejusdem Dissertatio Academica An Passioni Iliacæ Globuli plumbei Hydrargyro Preferendi.*
Monsp. 1694. in 12.

THe descent of the Chyle and *Fæces* thro the Guts, is owing to the Contraction of their Annular and Longitudinal Fibres. When the Aliment is first received in the *Duodenum*, the Annular Fibres contiguous to the *Pylorus* being irritated compress the Mass. This cannot recede into the Stomach by reason of the valvular structure of its lower orifice, and therefore it is protruded into that open part of the *Duodenum* next below. Now the Annual Fibres of the receiving part constringing themselves before the contraction of the former remits, there is less resistance beneath than in the superiour part, and therefore by this Tension the Mass is conveyed downwards. By a successive contraction of these Fibres after the manner described, its progress through the whole length of the Tube is effected. Besides this, while the Annular are thus contracted, the Longitudinal Fibres suffer a great distension, and therefore in their turn, either by their Elasticity or the Influx of the Spirits, they contract themselves, which shortens the Duct, and assists the motion of the Contents thro it.

From the nature of this Vermicular motion it appears when any obstruction shall happen by the Construction of the Intestinal Tube, the Chylaceous Mass must receive a new direction. In a Natural Order it is determined downwards, by reason of the Impediment at the Mouth of the *Pylorus*; on the contrary therefore when the Impediment shall happen to be
 greater

greater below, the Contracti^on of the Fibres of the Guts shall throw the Contents upwards.

There are many Causes from which such an Obstruction may arise, and several very different ones have been observed in the inspecting Bodies of such persons who have dyed of the Illiac Passi^on. Sometimes it arises from a Tumour compressing the Guts without, or stopping the passage within. The Glandulous and Carneous Coats of the Guts have been found replete with Blood, and have swoln the Intestine so far, as to make it impervious. Another Cause is the descent of the Gut into the *Scrotum* in Ruptures, the Congestion of the Ordure which is hardened and intercepts the passage, the entring of one part of the Gut into the other, the Convulsive Constriction of the Longitudinal or Annular Fibres, &c.

There are some marks to judge from which of these Causes the Iliac Passi^on does arise. For instance; if there has been a long suppressi^on, it may be concluded to proceed from a Congestion of the Excrements. If the person has eat much Fruit, or his breath smell acid, from Worms. If there be an acute burning or pungent pain, an excretion of a Sanious, Purulent or Bloody Liquor, from an Inflammation or Exulceration of the Guts. If the entring of one part of the Gut into the other be the cause of this Disease, none of the former symptoms appear, but there is a longish swelling like a Cord (whence the *Greeks* call it *Cordapsus*) as we do in *English* the twisting of the Guts. If it proceed from a Rupture, the swelling in the Groin is visible, if from a Convulsion of the Annular or Longitudinal Fibres, it is more difficult to make a judgment.

The Iliac Passi^on is never without danger, but is more easily cured in Infants and young people than in elder persons. Prognosticks are drawn out of the Writings of *Hippocrates*, in whose Aphorisms the Reader may find most of them.

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In a right method of Cure, bleeding is one of the first things to be done. The Patients Dyet must be Liquid, such as Broths made of soft and relaxing Ingredients, Barley and Rice Cream, Decoctions of the Roots of *Marsh Mallows*, adding *Oyl of sweet Almonds* to the quantity of several Ounces, Lenient and Emollient Clysters, with *Oyl of Linseed*, *White Lillies*, &c. Opiates and other Narcoticks, a tepid Bath of Water: Lastly, such things as by their weight will make their way through the Body, as Bullets of Lead, Gold, or a pound or two of Crude Mercury. After the taking these it is best to lye for some time on the Right side, to give them leave to pass the *Pylorus*, and so by turning from side to side to favour their descent thro the Duct of the Guts. *Monf. Chirac* thinks Crude Mercury not so safe as small Bullets of Lead, because meeting with Acid Liquors in the Bowels, which must corrode and dissolve some parts, the first can only be turned into a harmless Saccharine Salt; whereas the latter must make a great Effervescence, and become a violent Caustick, and he fears may increase the inflammation, or perhaps corrode and mortify the Guts.

4. *Christiani a Steenvelt dissertatio, de Ulcere verminoso ad Clarissimum virum Godefridum Bidloo. Lugd. Bat. apud Jordanum Luchmans. 1697. in 4o. pag. 24.*

THe Author, who was Surgeon to the Hospital in *Leyden*, recites in this small Treatise, a very extraordinary case, *viz.* *Mary Bulte* a Maid of 48 years and healthy, fell down twelve Stairs, and broke her Left leg three inches above the Ankle, so that the *tibia* Bone came out of the Skin above an Inch, the parts being very much in pain. The Wound was dilated, Bone set, and a proper bandage applied. Many pieces of Bones of several magnitudes came from the Wound, which are here figured. There was likewise care taken to prevent a gangrene. Five weeks after the fracture appeared an Ulcer about the prominent part of the Ankle, from whence issued matter. This Ulcer was healed, and 15 days after broke open afresh, after they thought the cure perfect, and in the bottom of the Ulcer they saw 50 Worms live, move and grow. These put into a Box in a warm place, changed into *Chrysalis's* in 6 days, and the Author's Servant cherishing them after 14 days longer they turned into Flies. The Author proposes it as a question, whether these Eggs had been laid or deposited in the Ulcer after the hurt, or brought thither by the Mass of Blood. He recites the opinions of learned men, concerning these wormy Ulcers, both Ancient and Modern, and thinks they cannot be produced of putrid matter, but that they come from Eggs wherein are the Lineaments of the Body to be produced. He tells us, Ducks and other Water-Fowl, with their Wings and Feathers carry Eggs of Fish to ponds, where

where no such Fish were to be found before. This argument is treated of at large, and the Figures of the Worm it self, its Chyfalıs and the Fly, are given both in their natural bigness, and magnified in whole and in some of its parts, in several positions in a curious Copper Plate He concludes with telling some Medicines proper for these kinds of diseases.

5. *Godefredi Bidloo observatio de animalculis in ovino aliorumq; animantium hepate detectis ad virum celebrem Antonium Lewenhœek Lugd Bat. apud Jordanum Luchtmans. 1698. in 4^o. pag. 33.*

AFTER giving a short account of what Authors have said of the Worms in the Gall-bladder of a Sheep, he proposes to treat of 4 particulars. 1. Concerning this Worms Body and disposition. 2dly, Concerning its place. 3dly, Its numbers, propagation, &c. 4thly, Its being the Cause of many Diseases. He compares its Figure and Motion to those of a Sole or Plaife, and exhibits it in a Copper plate in several positions, both to its natural Magnitude, and magnified. The Sheep are fat, and shew no outward sign of having them. If the Worms lose their motion, they recover some of it when heated with a warm hand, or put into a warm Liver. It is pellucid, and its Viscera are visible, it has Eyes, an Heart, near it the Guts close together, and two distinct Liquors moving in its vessels. He observed in them many egg-like bodies, whereof 100 would not be larger than a Corn of Sand. He always found these Worms in the Gall-vessels, which they dilate to a considerable largeness in some places, and when they lye in the smaller Vessels, they accommodate their figure to their place. He has taken 870 out of one Animal, and ten out of another.

They are found in Stags, Calves, &c. He thinks he has likewise remember'd to have seen them in mens Livers. He is of opinion they come not from putrid matter, but as all other living Creatures, from Eggs. He believes the eggs of them are eaten by the Cattle, together with the Liquor in which they live. He could not any way by experiment find the Stomach or Intestines of Animals troubled with this disease perforated. He does believe they cannot get from the *Duodenum* into the Gall-bladder, but supposes them to pass by the chyle into the Blood, with the Blood to the Liver, where they stay in the Gall-vessels. This he endeavours to make probable. He gives a long Catalogue of Worms observed in several parts of the Body, and thinks he has seen or read of them in all parts of the same, except the Spleen. He thinks these Worms may in several places be the cause of several Diseases, by occasioning swelling of the parts, corroding and gnawing of them, creeping into strait places, or exciting a motion in the juices of the Body, appropriating them to their own use, and fouling them with their Excrements and Off-spring. He thinks also that these Creatures in the Blood may occasion Diseases as well as the humours of the Body.

6. *Description de la piece d'ambregris que la chambre d'Amsterdam a recue des Indes orientales pesant 182 livres; avec un petit traite de son origine & de sa vertu par Nicolas Chevalier a Amsterdam chez l'auteur. 1700. in 40. pag. 67.*

THe *Dutch East India* Company presented the Author of this Treatise with the Plates they had caused to be graved of the piece of Ambergriese they had from the *East Indies*, of 182 pounds weight, 16 ounces to each pound. In the Preface he mentions and figures a Medal made on this occasion. About the Figure of the piece of Ambergriese on this Medal is this Inscription, *OCCULTUM NATURÆ AC NOBILE DORON*. Under it *FRAGMEN. AMBR. GRYS. LIBRAR. 182. HUC ALLAT. 1694.* On the reverse is *Amsterdam*, and its Port, with 2 Fleets, one entring, another setting Sail, about which is this inscription, *SIBI ET URBI*, and under it *VIVANT DII MEI PENATES*.

He gives some account of what several persons have said of Ambergriese, more particularly he has made use of the abstract in these Transactions of *Klobius's* Book called *Ambra Historia* printed in the year 1666, in 40. He mentions from other Authors some large pieces of this substance, as a piece of 300 weight found near *Cape Comorin*, sold as a Bitumen, and another of 15000 l. found near the same Cape. He gives the opinions at large of *Garcias ab Horto*, *Antoine Colin*, *Serapio*, *Scaliger*, &c. and comes at last to his own, which is, that it is a Bitumen, and comes from the Entrails of the Earth; this great piece has the figure of a drop, which may
come

come , says he, from its dropping forth from thence, or from the Rocks, which may be effected by the subterranean heat forcing it thither ; its being in so large pieces and crack'd on the surface, seems, he thinks, to favour this opinion. After this he gives an account of the vertues of it , which he pretends are very strengthening, especially of the Head and Nerves. At the end he gives an explanation of five curious Figures of it taken in several positions by the *Dutch East India* Company.
